

designed to improve the comfort of the seat surface. Any possible rubbing against the inside thighs of the user is attenuated by appropriate swingable means for securing the saddle to the frame of the pedal operated machine. Such swingable fastening means allow the saddle to rotate through a limited angle about an axis  
5 parallel to the longitudinal axis of the saddle. By this arrangement, during the pedaling action, the saddle may rock on the side of the pushing leg and the pressures exerted on the inside thigh are reduced.

A common drawback of all these embodiments consists in the remarkable  
10 complicated structure introduced by the use of these swingable fastening means, and by the consequent increase of construction costs.

#### Disclosure of the invention

15 A main object of this invention is to obviate the above mentioned drawbacks, by providing a support structure for a bicycle or other pedal driven machine, which is adapted to fit the muscles of legs and buttocks, and to provide high wellness and comfort during use.

20 A further object of the invention is to provide a support structure which has a sufficiently wide seat surface and such a shape as to limit compression both caused by the user's weight and by the pedaling motion, which are exerted in the inside thigh areas of the user.

25 A particular object is to provide a support structure which fits users of different statures and sizes.

Another particular object is to provide a support structure which is cost effective and achieve the desired performances without requiring expensive additional  
30 elements or excessive by complicated constructions.

Yet another particular object is to provide a support structure which is comfortable

and safe even when the user stands on the pedals of the bicycle or the like.

An additional object is to provide a support structure that may be shaped in such a manner as to have a pleasant aspect.

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These objects, as well as others that will be more apparent hereinafter, are achieved, according to claim 1, by a support structure having a seat surface, particularly for bicycles and other pedal operated machines, comprising a substantially rigid or semirigid frame, means for connecting the frame to the  
 10 bicycle or a pedal operated machine, a yieldable pad secured to the top face of the frame, covering layer superimposed to said yieldable pad, characterized in that the frame has one or more portions of different rigidity adapted to facilitate the pedaling motion.

15 Thank to such particular arrangement the support structure may fit the muscles of legs and buttocks and provide a high wellness and comfort, even to users having different body sizes, and without requiring expensive additional elements or excessive by complicated structures.

20 Preferably, the frame has at least one pair of differential rigidity portions, located at the sides, symmetrically with respect to the longitudinal axis which is defined by an elongated front portion of the frame.

Thanks to this particular configuration, the support structure will have a sufficiently  
 25 wide seat surface of such a shape as to limit the compressions caused by the user's weight and, at the same time, will have a local flexibility to also reduce the compressions and rubbing caused by the pedaling motion, in the inside thigh areas of the user.

30 Suitably, at least one differential rigidity portion is located on the rear edge of the frame.

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### CLAIMS

1. A support structure having a seat surface (2), particularly for bicycles and other pedal operated machines, comprising a substantially rigid or semirigid frame (3),  
5 means (4) for securing said frame (3) to the bicycle or a pedal operated machine, a yieldable pad (7) secured to the top face of said frame (3), a covering layer (8) superimposed to the yieldable pad (7), characterized in that said frame (3) has one or more differential rigidity portions (11, 11') adapted to facilitate the pedaling motion.
- 10 2. Support structure as claimed in claim 1, characterized in that said differential rigidity portions (11, 11') are located in the proximity of an outer peripheral edge (13) of said frame (3).
- 15 3. Support structure as claimed in claim 2, characterized in that said frame (3) has at least one recess (12) along its outer peripheral edge (13).
4. Support structure as claimed in claim 2, characterized in that each of said differential rigidity portions (11, 11') comprise a plurality of elongated projections  
20 (14) extending outwards from their respective recesses (12) formed in said frame (3).
5. Support structure as claimed in claim 4, characterized in that said projections (14) of each of said differential rigidity portions (11, 11') extend substantially  
25 parallel to one another so as to form a comblike structure.
6. Support structure as claimed in claim 5, characterized in that each of said projections (14) of each of said differential rigidity portions (11, 11') is located at a predetermined distance (H) from the other projections adjacent thereto, which  
30 distance may vary for each projection (14).
7. Support structure as claimed in claim 6, characterized in that each of said

differential rigidity portions (11, 11') comprises filling elements (15) within the spaces between said projections (14).

8. Support structure as claimed in claim 7, characterized in that the base material  
5 of said filling elements (15) is a plastic and/or elastomeric material.

9. Support structure as claimed in claim 6, characterized in that the free ends  
(16) of said projections (14) are substantially aligned to define an edge (17) which  
is connected with said outer peripheral edge (13) of said frame (3).

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10. Support structure as claimed in claim 6, characterized in that each of said  
projections (14) has a flexural and shear strength depending on the load direction.

11. Support structure as claimed in claim 10, characterized in that each of said  
15 projecting appendices (14) has such a cross section and shape as to provide a  
predetermined flexural and shear strength, relative to load activity both  
substantially normal to said seat surface (2), and along a plane substantially  
parallel to the seat surface (2).

20 12. Support structure as claimed in claim 6, characterized in that said projections  
(14) are monolithic with said frame (3).

13. Support structure as claimed in one or more of the preceding claims,  
characterized in that said frame (3) has a laterally widened rear portion (9) for  
25 supporting the buttocks of a user and an elongated front portion (10) defining a  
longitudinal axis (L).

14. Support structure as claimed in claim 13, characterized in that it comprises at  
least one pair of said differential rigidity portions (11), symmetrically located with  
30 respect to said longitudinal axis (L).

15. Support structure as claimed in claim 14, characterized in that said symmetric pair of differential rigidity portions (11) is located at the sides of said widened rear portion (9) and/or at the junction between said widened rear portion (9) and said elongated front portion (10).

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16. Support structure as claimed in claim 13, characterized in that at least one of said differential rigidity portions (11') is located on the rear edge (18) of said widened rear portion (9).

10 17. Support structure as claimed in one or more of the preceding claims, characterized in that said yieldable pad (7) and/or said covering layer (8) have such an extension as to wholly or partly cover said differential rigidity portions (11, 11').